

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)	Examiner: L. BEHRINGER
W. ALI)	
)	Art Unit: 3766
Serial No.: 10/568,173)	
)	Confirmation: 6165
Filed: February 10, 2006)	
)	
For: A SYSTEM AND METHOD)	
FOR DETECTING SIGNAL)	
ARTIFACTS)	
)	
Date of Examiner's Answer:)	
October 27, 2010)	
)	
Attorney Docket No.:)	Cleveland, OH 44114
PHUS030273US2 / PKRZ 201286US01)	December 16, 2010

REPLY BRIEF

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Reply Brief is responsive to the Examiner's Answer of October 27, 2010. This Brief is responsive to new points raised in the Examiner's Answer.

The Appellant elects to maintain the Appeal and address each new ground of rejection in this Reply Brief.

This Reply Brief addresses only new issues, new grounds of rejection, and the Response to Arguments set forth in the Examiner's Answer.

(1) REAL PARTY IN INTEREST

The Examiner's Answer raises no new issues.

CERTIFICATE OF ELECTRONIC TRANSMISSION

I certify that this **REPLY BRIEF** and accompanying documents in connection with U.S. Serial No. 10/568,173 are being filed on the date indicated below by electronic transmission with the United States Patent and Trademark Office via the electronic filing system (EFS-Web).

Dec 21 2010
Date

Patricia A. Heim
Patricia A. Heim

(2) RELATED APPEALS AND INTERFERENCES

The Examiner has failed to set forth any reason why he considers the appeal in US 10/571,809 to be related to the present appeal. The sole issue in US 10/571,809 is whether the claims of US 10/571,809 are anticipated in the sense of 35 U.S.C. § 102 by Williams (US 2003/0023183). In the present application, the issues relate to whether the present, different claims are anticipated by or obvious over different references. The Williams reference is not applied against any claim of the present application. There is no issue of double-patenting between the claims of the present application and those of US 10/571,809, i.e., the claims are considered to be patentably distinct.

Due to the complete lack of any overlap in the issues presented in the present Appeal and the Appeal in US 10/571,809, it is submitted that the present Appeal and the Appeal in US 10/571,809 can be decided completely independently and that the Board's decision in one will be independent of the Board's decision in the other. Of course, the Board is welcome to review both Appeals, consider them in tandem, or take such other action as the Board may deem appropriate in deciding these two Appeals.

(3) STATUS OF CLAIMS

The Examiner does not disagree with the Status of Claims (Pending, Rejected, etc). set forth in the Appeal Brief. Accordingly, the Status of Claims as set forth in the Appeal Brief is taken as correct.

(4) STATUS OF AMENDMENTS AFTER FINAL

The Examiner raises no objection to the Status of Amendments After Final set forth in the Appeal Brief. Accordingly, the appellant's statement of the Status of Amendments after the Final Rejection is taken as correct.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

The Examiner makes no objection the Summary of Claimed Subject Matter set forth in the Appeal Brief. Accordingly, the Summary of the Claimed Subject Matter as set forth in the Appeal Brief should be taken as correct.

(8) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The double-patenting rejection set forth in the non-Final Office Action of June 22, 2009 was not presented as a grounds of rejection in the Final Rejection of March 17, 2010 and is/was understood to have been withdrawn. Indeed, in the Examiner's Answer, it is still unclear whether the Examiner is or is not making a double-patenting rejection. The Examiner's Answer merely observes that the double-patenting rejection of June 22, 2009 was not previously addressed. But, the R Examiner's Answer makes no assertion that any claims stand rejected on the grounds of double-patenting. However, for completeness, reasons why the double-patenting rejection is inappropriate and should be withdrawn are set forth below.

First, the Examiner asserts that "claims 7, 8, 17, and 18 of US 10/597,309 are preliminary steps to the actuation of claims 1, 4, 7, and 13 of the instant application". This is not a grounds for obviousness. No other basis for the rejection is given.

Second, claims 1, 4, 7, and 13 set forth numerous limitations not found in claims 7, 8, 17, and 18 of US 10/597,309. The Examiner cites no references and provides no affidavits as to why these differences are obvious. Indeed, the Examiner does not address why the differences between the present claims and those of US 10/597,309 would be obvious.

Claim 1 calls for determining a global correlation matrix over a first period of time and a local correlation matrix over a second period of time which is shorter than the first period of time. Claims 7 and 17 of US 10/597,309 each reference a correlation matrix. However, none of the claims 7, 8, 17, or 18 of US 10/597,309 reference a global and a local correlation matrix, nor do these claims reference two correlation matrices over different periods of time. Claim 1 further calls for a local correlation vector indicative of a deviation between the local and global correlation matrices. Claims 7, 8, 17, and 18 of US 10/597,309 do not disclose such a correlation vector. Moreover, claims 7, 8, 17, and 18 of US 10/597,309 do not set forth two matrices between which a deviation can be determined. Claim 1 further calls for an average of the correlation vector. Claims 7, 8, 17, and 18 of US 10/597,309 disclose neither a correlation vector nor an average thereof. Because the Examiner has failed to provide any reasoned statement as to why these differences would be obvious in the sense of 35 U.S.C. § 103, nor has presented any references,

affidavits, or other evidence in support thereof, it is submitted that the Examiner has failed to make a *prima facie* case of obviousness and the double-patenting rejection against claim 1 must fail.

Claim 4 calls for determining a global correlation over a first time period and a local correlation over a second, shorter time period. Claims 7, 8, 17, and 18 of US 10/597,309 do not disclose determining global and local correlations over different time periods. Claim 4 further calls for repeatedly determining a current deviation between the local and global correlations and determining an average deviation of the plurality of current deviations. Claims 7, 8, 17, and 18 of US 10/597,309 do not disclose repeatedly determining a current deviation between local and global correlations, nor determining an average thereof. The Examiner has failed to provide any reasoning why these differences would be obvious and has failed to provide any references, affidavits, or other evidence in support of such unreasoned assertions of obviousness. Accordingly, it is submitted that the Examiner has failed to make a *prima facie* case of obviousness between the claims of the present application and those of US 10/597,309.

Claim 7 calls for determining a global correlation and a local correlation over different periods of time. None of claims 7, 8, 17, or 18 of US 10/597,309 disclose or fairly suggest determining correlations over two different periods of time. Claim 7 further calls for repeatedly determining a current deviation between the local and global correlations, and determining an average thereof. None of claims 7, 8, 17, and 18 of US 10/597,309 disclose either determining a current deviation between local and global correlations, or determining an average thereof. The Examiner has failed to provide any explanation as to why these numerous differences are patentably indistinct. Because the Examiner has failed to provide any reasoning or evidence to support his assertion of obviousness, it is submitted that the Examiner has failed to make a *prima facie* showing of obviousness and that the double-patenting rejection relative to claim 7 must fail.

Claim 13 calls for a system having means for determining global and local correlations over longer and shorter periods of time. None of claims 7, 8, 17, or 18 of US 10/597,309 disclose any means for determining global and local correlations over different periods of time. Claim 13 further calls for determining a deviation between the local and global correlation vector and means for determining

the average deviation. None of claims 7, 8, 17, or 18 of US 10/597,309 disclose means for determining such a deviation or means for determining an average deviation. The Examiner has failed to make a *prima facie* case of obviousness. Indeed, the Examiner has supplied no reasoning or basis why he considers these differences of the present claims over the claims of US 10/597,309 to be obvious in the sense of 35 U.S.C. § 103, much less extended the courtesy of citing references, submitting affidavits, or offering other evidence in support thereof. Accordingly, it is submitted that the Examiner's double-patenting rejection of claims 1, 4, 7, and 13 must fail.

35 U.S.C. § 102

The Examiner's rejection under 35 U.S.C. § 102 appears to be substantially identical to the rejection presented in the Final Rejection of June 22, 2009. Because there has been no substantive change in this rejection, it is submitted that the applicant is not herein entitled to respond.

35 U.S.C. § 103

The discussion of the 35 U.S.C. § 103 rejection in the first paragraph of Paragraphs 5 and 7 in the Examiner's Answer differs from the first paragraph of Paragraphs 11 and 13 in the Final Rejection in its inclusion of the last sentence. Specifically, the Examiner asserts that page 4, lines 12-20 of the present application is not limited to medical applications.

As is set forth more completely in the first paragraph of page 1 of the present application, the present application relates to a system and method for detecting artifacts which finds particular application to a system and method used with patient monitoring apparatus. Thus, while the applicant asserts that the present application has application outside of the patient monitoring environment, the present application does have particular application in the medical patient monitoring arts. This is further reflected in the claims on Appeal. Note for example that claim 1 (and other claims) are not limited to the patient monitoring application to which the present is particularly adapted. However, claims 2, 3, 4, and other claims focus specifically on the patient monitoring field. It is the applicant's prerogative to claim the inventive

concepts broadly and to limit or focus other claims more specifically on the patient monitoring environment to which it is particularly adapted.

For the reasons set forth above, it is submitted that this change in the wording does not alter the persuasiveness of any of the arguments presented by the appellant in the Appeal Brief and refers the Board thereto.

(10) RESPONSE TO ARGUMENTS

Regarding Claim 1

It is an academic issue whether $X_n(k)$ of Shimauchi is a vector or a matrix. Whichever mathematical term best describes it, it is the input signal, not a global or a local cross-correlation matrix. Indeed, $x_1(k)$ and $x_2(k)$ are the two-channel received signal vectors (column 4, lines 6-8, 24, 29-30, etc.) $X_n(k)$ also represents the received signal, particularly, the signal received on a n^{th} channel, (column 3, lines 5-6). Specific to Shimauchi's stereo teleconferencing system, received signal $x_1(k)$ is the voice signal received by one of the pair of stereo microphones and $x_2(k)$ is the signal received by the second of the stereo microphones. Whether these signals are vectors, as Shimauchi calls them, or a matrix, they are neither a global nor a local correlation matrix.

Shimauchi is not concerned with the correlation between the two input signals x_1 and x_2 . Rather, Shimauchi concerns a method and apparatus for multi-channel acoustic echo cancellation, which cancel a room echo that causes howling and presents a psychoacoustic problem in a teleconference system provided with a multi-receive-channel system (column 1, lines 6-10). The Examiner relies on the acknowledged prior art in Shimauchi as described in columns 2-6 and Figures 1-3. The abstract of Shimauchi is the abstract of that which is new, i.e., the embodiments set forth in columns 6-21. The Examiner proposes to combine teachings of the acknowledged prior art (not represented as having been invented by Shimauchi) and Shimauchi's preferred embodiments. For a 35 U.S.C. § 102 rejection, the Examiner must rely on a single reference, not a combination of two references, e.g., Shimauchi's acknowledged prior art and Shimauchi's detailed description.

In the acknowledged prior art of columns 2-6 of Shimauchi, the cross-correlation is not determined with matrices or other ways. Rather, the cross-

correlation between the multi-channel receive signals x_1, x_2, \dots is treated as fixed (column 8, lines 23-24; column 10, lines 26-28).

Instead of accepting the cross-correlation between the input signals as fixed, Shimauchi proposes (column 10, lines 28-40) to combine the received signal vectors x_1, x_2, \dots into a single vector (column 8, lines 30-31) and determines a correlation between past and current combined received signal vectors (column 8, lines 27-36). Shimauchi can treat this combined received signal vector as a constant vector component and a variation vector component. More specifically, Shimauchi proposes to use a projection algorithm or the like (column 8, line 42 – column 9, line 67) to generate an adjustment vector $v(k)$ (column 10, lines 1-19). This adjustment vector $v(k)$ is used to adjust the estimated transfer function, particularly, the estimated echo path vector $\hat{h}(k)$ (column 11, lines 24-28). As explained at column 13, starting at line 31, Figure 6, referenced by the Examiner, describes the working of the cross-correlation variation extracting part 31. This component receives the combined received signal $x(k)$ which, as stated above, is the combination of the received signals on all channels and the residual echoes $e_m(k)$ for each channel. The variation extracting part 31 generates the adjustment vector $v(k)$ using Equation (52) which is used by adjusting part 32 to adjust the echo path $\hat{h}_m(k)$ (column 13, line 31 – column 14, line 6).

It will be seen in all of these calculations that there is no global correlation matrix for the event signals over a first period of time and no local correlation matrix for the received event signals over a second period of time which is shorter than the first period of time. The adjustment vector $v(k)$ of Shimauchi is used to correct the echo path and is not a correlation vector indicative of a deviation between local and global correlation matrices as defined above. Moreover, Shimauchi does not determine an average of the adjustment vector $v(k)$. While the NLMS algorithm discussed by Shimauchi in column 2, lines 9-37, referenced by the Examiner, is an averaging process, it is an averaging process which is not performed on the adjustment vector $v(k)$. Indeed, it is submitted that the NLMS algorithm of column 2, lines 9-37 of Shimauchi is part of the acknowledged prior art reference and not a part of the improvement set forth by Shimauchi starting in column 7. Indeed, Shimauchi specifically teaches against the use of the NLMS algorithm in favor of the projecting algorithm discussed above (column 9, lines 61-67).

Shimauchi does not determine whether an artifact was detected in one of at least two event signals from a correlation vector and an average of the correlation vector. Adjustment vector $v(k)$ as described in column 13, lines 31-column 14, line 6, which discussed Figure 6, is not a determination of whether an artifact was detected in at least one of the two event signals. Rather, Shimauchi applies the adjustment vector $v(k)$ to the path-length vector $\hat{h}_m(k)$ to adjust the effective echo path length in response to relative variations in the input signals. In this manner, Shimauchi dynamically adjusts the echo compensation signal which is added to the received signal to cancel or offset the acoustic echo in a multi-channel teleconference system. Thus, Shimauchi discloses a materially different circuit which operates in a materially different way in order to achieve a materially different end result.

The appellant stands by the arguments presented in the Appeal Brief and refers the Board to them.

Regarding Claims 2 and 3

The Examiner again fails to provide any specific guidance as to how he proposes to combine Snyder with Shimauchi. For example, claim 2 adds to claim 1 that the device is a patient monitoring system. While Snyder does disclose a patient monitoring system, the Examiner fails to provide any explanation about how or why one would try to combine these two references. Perhaps the Examiner is asserting that it would be obvious to use the Shimauchi echo cancellation system in the patient monitor of Shimauchi. However, such a combination would not be motivated by the references because patient monitors, like the patient monitor of Shimauchi, does not have a feedback echo problem or use a feedback echo cancellation system.

The Examiner asserts that combining Shimauchi and Snyder would produce predictable results. It would have been appreciated if the Examiner would have explained what those predictable results are. Perhaps, those predictable results are that the patient monitor of Snyder which had no echo feedback problems would still have no echo feedback problems. All of this begs the question of just how or which parts of Snyder the Examiner is proposing to put into which portion of the signal processing stream of Shimauchi.

Moreover, the event signals of Snyder are physiological data. Adding correction signals of the nature of Shimauchi into physiological data signals is not good medical practice. In many physiological signals, subtleties are of significant medical diagnostic value. For example, when monitoring EKG signals, the EKG signal is a generally repeating waveform. Variations in the repetition can be of great diagnostic significance. If one were to add attenuated and delayed versions of the cardiac signal onto itself, the resultant signal would not be corrected, but rather would be contaminated with apparent cardiac information which is not in fact in the signal. This could lead to the creation of faux cardiac data which could lead to inaccurate diagnoses. For example, a heart murmur produces a component of the cardiac signal which is more in the nature of the echo component of Shimauchi. Eliminating this component of the cardiac signal could lead to the heart murmur being not diagnosed. Conversely, adding the Shimauchi echo correction component to the signal could result in the creation of a cardiac signal which looks like the patient has a heart murmur or other malady when, in fact, the patient does not.

Because operating on the received cardiac or other physiological signals of Snyder with the noise cancellation circuitry would contaminate the physiological signals and make them unreliable for diagnostic purposes, it is submitted that it would not be obvious to combine Snyder with Shimauchi as suggested by the Examiner.

The appellant stands by the arguments presented in the Appeal Brief and refers the Board to them.

Regarding Claim 3

The Examiner asserts that he is equating echoes to noise and artifacts. As understood, the Examiner appears to be asserting that if the biological or potentially corrupted event signals into the input terminals 11₁, 11₂, ... , then Shimauchi would inherently cancel not only echoes (which the Snyder signals do not have), but also other noise and artifacts. The appellant disagrees.

The Shimauchi patent eliminates echoes. Shimauchi does this by calculating echo paths $\hat{h}_m(k)$. These paths provide echoes of various orders or delays. For example, the echoes may bounce off of one wall and return to the microphone, bounce off of two walls before returning to the microphone, etc. Shimauchi

recognizes that the echo is a function of the path and the input signals. More specifically, the echo correction removes (adds an inverse), an attenuated and delayed copy of the input signal to accommodate the length of the path, e.g., number of reflections, between the loudspeaker and the microphone. Stated differently, the echo in Shimauchi is a function of the input signal(s). The correction which Shimauchi applies a delayed function of the input signal to correct for echoes. It is submitted that such an echo correction technique only removes echoes (i.e., functions of the input signal) and not other types of noise or artifacts.

The appellant stands by the arguments presented in the Appeal Brief and refers the Board to them.

Regarding Claim 5

The Examiner bears the burden of making a *prima facie* case that the claimed subject matter is obvious over the references of record. The Examiner has failed to make a *prima facie* showing that the Shimauchi circuit would remove noise and artifacts of the type with which Snyder is concerned. The appellant submits that one with a basic knowledge of how the Shimauchi circuit functions would not conclude that it can remove noise and artifacts other than echoes of the input signals. As indicated above, it is the appellant's understanding that the Examiner proposes to combine Shimauchi with Snyder by applying the potentially corrupted event signals of Snyder to the inputs $11_1, 11_2, \dots$ as the event signals $x_1(k), x_2(k)$, etc. of Shimauchi. It is submitted that the arguments presented in Section (vii)(D) of the Appeal Brief does not go beyond the limitations of claim 5. Indeed, this section of the Appeal Brief questions the motivation to combine rather than addressing any specific limitation. If the Examiner is proposing to combine Shimauchi and Snyder in a different way against claim 5 than as against claims 2 and 3, it would be appreciated if the Examiner would set forth the different way(s) in which he is combining the references relative to the different claims.

The appellant stands by the arguments presented in the Appeal Brief and refers the Board to them.

Regarding Claim 6

Parent claim 1 was rejected under 35 U.S.C. § 102 over Shimauchi. The Examiner combined Shimauchi with Snyder in the § 103 rejection against claim 6. The discussion in the Appeal Brief addresses the appropriateness of the combination.

The appellant stands by the arguments presented in the Appeal Brief and refers the Board to them.

Regarding Claim 4

As discussed above in conjunction with claims 2 and 3, the Examiner's Answer appears to assert that the Examiner is proposing to input the potentially corrupted event signals of Snyder into the inputs 11 of Shimauchi as the received signals $x_1(k)$, $x_2(k)$. Now, the Examiner asserts that the inference processor 128 of Snyder is an alarm indicator. Significant by its absence in either the Final Rejection or the Examiner's Answer is any explanation by the Examiner of just where in the circuitry of Shimauchi he is proposing to insert the inference processor 128 of Snyder, much less why it should be inserted. It should also be noted that the functioning of the inference processor 128 of Snyder is dependent on the nature of the signals which it receives. Accordingly, depending on where the Examiner chooses to insert the inference processor 128 of Snyder into the Shimauchi circuit, it can perform various functions including no function at all or potentially even rendering the Shimauchi circuit unable to perform its intended function.

The appellant refers the Board to the arguments raised in the Appeal Brief which, it is asserted, have neither been addressed or refuted in the Examiner's Answer.

Regarding Claims 7-12

The Examiner asserts that the limitations addressed by the appellant with respect to claim 7 were addressed in the Examiner's Answer Response to Arguments concerning claim 1. However, it should be noted that claim 1 was rejected under 35 U.S.C. § 102 over Shimauchi; whereas, claim 7 stands rejected under 35 U.S.C. § 103 over Snyder as modified by the teaching reference of Shimauchi.

As indicated above, the appellant disputes the Examiner's assertion that the circuit of Shimauchi would be able to cancel the noise and artifacts in the potentially corrupted event signals of Snyder. Again, the Shimauchi algorithm removes echoes which are a delayed and attenuated reflection of known input or received signals. In Shimauchi, the echo paths $\hat{h}_m(k)$ are relatively fixed, rendering the echo relatively predictable. The noise and artifacts in Snyder are not such a function of the input signal, i.e., the potentially corrupted event signal. Rather, the nature of the corruption of the event signal of Snyder is much more random and unpredictable. Thus, it is submitted that the Shimauchi prior art is not capable of performing the intended use of removing artifacts and noise in the potentially corrupted event signal in the nature of the physiological signals of Snyder.

It should be noted that Snyder determines whether, or at least evaluates the likelihood, that a signal is contaminated. This degree of contamination is taken into account when the signal is processed to make the diagnosis or determine the cause of action. Significant by its absence is any suggestion in Snyder that one should add a signal component to the event signal in an attempt to correct for an echo-like artifact or noise component.

Further, it is submitted that rather than eliminate noise and artifacts in the vent signals of Snyder, the Shimauchi circuit would add a signal component into the event signal, contaminating it.

The appellant stands by the arguments presented in the Appeal Brief and refers the Board to them.

Regarding Claim 10

The Examiner asserts that he is interpreting the output of the inference processor as an alarm indicator. But, the results of the correlations are provided to the inference processor 128 for evaluation to provide an indication of the degree of corruption of the event signal 104 (column 7, lines 41-44). In the embodiment of Figure 4a, if the output does not exceed a threshold, then the signal is analyzed and, if the inference output 102 exceeds the threshold, then the device does not analyze the signal. The analysis in Snyder, relates as to whether the signal represents a normal beat pattern of the patient's heart versus a ventricular defibrillation (column 1, lines 43-45) and making the decision whether or not to shock the patient.

The appellant stands by and refers the Board to the arguments made in conjunction with claim 10 in the Appeal Brief.

Regarding Claim 13

The appellant refers the Board to the appellant's reply in connection with claim 1, above.

Regarding Claims 13 and 14

The appellant agrees that a teaching, suggestion, or motivation to combine can come from the combined references themselves. However, claim 13 is rejected under 35 U.S.C. § 102 over a single reference, making motivation to combine inapplicable.

Regarding claim 13 which is rejected under 35 U.S.C. § 103, the Examiner has failed to show where in Snyder or Shimauchi one would find a motivation to combine. Shimauchi and Snyder both disclose different circuits which work in different ways to achieve different end results for different purposes. Shimauchi is looking to cancel noise by adding (or subtracting) a function of the received signals back into the received signals. By distinction, Snyder is looking to determine how likely it is that an event signal in the nature of an ECG signal is contaminated or artifacted. The likelihood or degree of contamination is used in the subsequent analysis to determine weight given to the signal. Snyder makes no suggestion of adding a component to the physiological event signals to try to counteract echo, noise, or artifact components thereof. Indeed, as discussed above, adding a manufactured ECG like component (such as the echo correction component of Shimauchi) to the ECG signal of Snyder, it is submitted, it is bad or even possibly unacceptable medical practice.

Accordingly, it is submitted that the Examiner has failed to show that it is obvious to combine the Shimauchi and Snyder references.

Although the Examiner may consider echo, noise, and artifacts to be synonymous terms, it is submitted that the Shimauchi echo cancellation technique would not operate to cancel noise or artifacts in the nature of those set forth in Snyder. Analogously, it is questioned whether the noise and artifact recognition techniques of Snyder would be ineffective for recognizing echoes and it would not generate an echo

cancellation signal. Because Shimauchi does not recognize and correct for the noise and artifact signals of the type found in Snyder, and Snyder does not recognize echo signals in the nature of Shimauchi nor provide an echo cancellation signal, it is submitted that in the context of Shimauchi and Snyder, echoes are not synonymous with noise and artifacts.

The appellant stands by the arguments presented in the Appeal Brief and refers the Board to them.

Regarding Claim 15

The Examiner proposes to put the event signals of Snyder into the circuitry of Shimauchi. Shimauchi determines an echo component and combines it with the received signal to cancel echoes. The appellant continues to assert that the combination of Shimauchi and Snyder created by the Examiner would perform no useful function because the Snyder physiological signals have no echo problem and Shimauchi corrects echo problems with the Snyder event signals do not have. Thus, because the combination proposed by the Examiner would perform no useful function, it is submitted that the combination is not obvious in the sense of 35 U.S.C. § 103.

Because Shimauchi would contaminate the diagnostic event signals of Snyder by adding components to the signals which do not represent data from the patient adversely affecting their reliability, it is submitted that the references teach against the combination.

The appellant stands by and refers the Board to the arguments presented concerning claim 15 in the corresponding section of the Appeal Brief.

(11) RELATED PROCEEDINGS APPENDIX

No reply is necessary.

(12) REOPEN PROSECUTION/MAINTAIN APPEAL

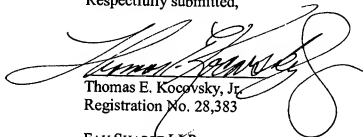
As indicated above, the applicant elects to maintain the Appeal by filing this Reply Brief which addresses each new ground of rejection.

CONCLUSION

For the reasons set forth in the Appeal Brief and for the clarifications provided above, it is submitted that claims 1 and 13 are not anticipated by Shimauchi, that claims 2-6 and 14-16 distinguish patentably over Shimauchi as modified by Snyder, and that claims 7-12 distinguish patentably over Snyder and modified by Shimauchi, and that there is no double-patenting conflict with US 10/597,309.

An early reversal of all rejections is requested.

Respectfully submitted,



Thomas E. Kocovsky, Jr.
Registration No. 28,383

FAY SHARPE LLP
The Halle Building, 5th Floor
1228 Euclid Avenue
Cleveland, OH 44115-1843
Telephone: 216.363.9000 (main)
Telephone: 216.363.9122 (direct)
Facsimile: 216.363.9001
E-Mail: tkocovsky@faysharpe.com